



NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

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TABLE OF CONTENTS

Burns: Surgical Management	1	The Metric System	11
Used Gas Masks and Canisters	5	Penicillin in Neurosyphilis	14
Streptococcal Diseases: Control	6	Penicillin in Endocarditis	14
Streptococci: Classification	7	Penicillin: Inactivation	15
Hemophilia: Plasma Factor for	8	Rehydration of Survivors	16
Multiple Sclerosis: Fundi in	8	Hyperabduction of Arms: Effects	16
Globin as a Blood Substitute	9	Tularemia: Therapy	17
Rest: Effect on Blood Volume	10	Rheumatic Fever: P-R Interval	18
Circulatory Response to Morphine	10	New BuMed Publications	18
Cancellous Bone Grafts	11	Public Health Foreign Reports	20

Form Letters:

Immunization Against Yellow Fever	BuMed	21
Preparation and Submission of NavMed-4	BuMed	23
Processing of Repatriates	Joint Ltr	28

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Surgical Management of Thermal Burns: The treatment of burns by minimal debridement, pressure dressings and plasma resuscitation is recommended as standard procedure. Tannic acid and other escharotics have been abandoned and are not to be used.

The principle of infrequent dressings should be followed. A properly applied initial dressing may be left in place for from 10 to 14 days. The period following immediately upon resuscitation is concerned with the treatment of impending infection and the correction of the systemic disturbances incident to the injury. There is increasing clinical recognition of the later consequences of protracted initial anoxemia. It is still considered by some that a true toxemia may

exist in the early stages of a severe burn, but the "toxin" in the damaged tissue remains unidentified. Venous thrombosis and pulmonary infarction are recognized complications of serious burns. Fluid, protein, and sodium loss with progressive anemia characterize the immediate convalescence. Compensatory redistribution of body fluids is most active during the first week after injury.

Penicillin is the chemotherapeutic agent of choice in the treatment of impending, or established, invasive infection in burns. The drug should be continued until the wounds are healed by epithelialization or skin grafting. Systemic penicillin therapy should be employed; local penicillin therapy is not recommended. The sulfonamides have been abandoned in the treatment of burns, especially because of renal complications following their use.

Removal of tissues destroyed by the burn is postponed of necessity until demarcation is apparent, usually at from 10 to 14 days. Surgical excision of sloughing tissue is preferable to the use of proteolytic (Dakin's solution) or macerating (saline) dressings. Frequent dressings of granulating surfaces invite wound suppuration due especially to Ps. aeruginosa (pyocyanus) or Proteus. The preferred method of management combines systemic penicillin therapy, surgical removal of devitalized tissue remnants, and the application of dry (not petrolatum) fine mesh gauze with pressure dressings, followed by skin grafting from 3 to 5 days later.

It has been demonstrated that excessively high environmental temperature is poorly tolerated by patients with extensive burns. Naval installations in the tropics should anticipate the need for controlled temperature rooms.

Emergency Treatment: Contamination of burned surfaces with organisms from the nose and throat is responsible for some of the more serious infections. Masking of attendants to minimize contamination from this source should be done whenever practicable.

The burned surface should be covered with a single layer of sterile mesh gauze (44-mesh gauze bandage is satisfactory). Over this should be added a thick layer of sterile gauze dressing, the large or small first-aid dressings being especially suitable for this purpose. Finally, a gauze or muslin bandage should be applied firmly over all.

The prompt administration of plasma, when feasible, constitutes an important element in the emergency treatment of burns.

Initial Surgical Management: Resuscitation: Anticipant or preventive therapy is preferable to corrective treatment for hemoconcentration or shock. The initial phase of resuscitation is accomplished with plasma. Blood transfusions are desirable in the later stages of resuscitation, especially if there is

evidence of red blood cell destruction. The fluid and nutritional therapy of burns will be discussed in an early issue of the Burned News Letter.

Relief of pain: It is important to distinguish between pain and anoxia as a source of restlessness, anxiety and apprehension. Asphyxia or carbon monoxide poisoning may be a complication of burns received in buildings or closed compartments. Damage to pulmonary epithelium from hot or noxious fumes may produce pulmonary edema early or after a delay of several hours. Anoxia from these sources is not infrequent. Pain from an extensive burn can ordinarily be relieved by 1/4 grain of morphine. Larger doses of morphine are dangerous in the presence of anoxia. If no syringe is at hand, morphine gr. 1/4 may be placed under the tongue until dissolved. The intravenous injection of 1/6- or 1/8-grain doses may be indicated if peripheral circulatory failure precludes effective absorption from an intramuscular or subcutaneous injection. Barbiturates, preferably nembutal sodium in 1-grain dosage intravenously, are effective sedatives to allay the anxiety and restlessness of anoxia. It should be remembered that sensitivity to these agents is increased during shock. Pentothal, if needed, should be used in analgesic rather than anesthetic dosage. Paraldehyde is contraindicated because it is a pulmonary irritant excreted by volatilization.

Oxygen therapy is indicated during resuscitation and for the treatment of anoxia. The positive pressure mask is contraindicated in the administration of oxygen for anoxia resulting from pulmonary edema due to the inhalation irritant gases.

Treatment of burned area: Local treatment of the burned area should be accomplished with strict asepsis and operating room facilities. If the burned surface appears clean, no further cleansing should be done. Small blisters should not be disturbed, but larger ones may be punctured or aspirated without removal of the epidermis. Loose shreds of epidermis should be removed. If the burned surface is grossly soiled, the area and the surrounding skin for a considerable distance should be carefully and gently cleansed using cotton or gauze, neutral soap and water. Green soap and brushes should not be used. Too vigorous cleansing increases plasma loss and may precipitate circulatory failure. General anesthesia should be avoided. Evidence of irreparable damage to the deeper layers of the skin may not be apparent for several days, and excision in such cases should be done as a secondary procedure.

The burned surface is covered with a single layer of dry or petrolatum fine mesh gauze so as to favor absorption of excessive wound exudate. Over this should be added a thick, smooth layer of gauze and cotton waste. In the case of an extremity, this should surround the entire limb. The dressing is secured by a firmly applied stockinette roller or elastic bandage. Immobilization

of the part by splinting should be effected when feasible. Portions of an extremity distal to the burn should be incorporated within the pressure dressing. The margin of safety between effective pressure and excessive compression is relatively small. The tips of the toes or fingers should be available for periodic inspection for several hours after the bandage has been applied. The principle of infrequent dressings is especially desirable in the treatment of burns. In the majority of cases it will be practical to leave the dressing in place for from 10 to 14 days.

In the treatment of impending infection penicillin is the drug of choice. Extensive fluid loss and depressed renal function increase the risk of renal complications from sulfonamide therapy. Penicillin should be administered in a dosage of 25,000 units every 3 hours, intramuscularly. In addition, 25,000 units should be given intravenously at the time of the first intramuscular dose. Persistent shock warrants continued intravenous therapy to insure absorption. The local application of sulfonamides, penicillin, or other antibacterial agents is not approved. Prophylaxis against tetanus is recommended for all cases with deep burns.

Repeated dressings are to be avoided. In general, secondary dressings of unhealed burns are done to excise the late slough of deep burns or to apply skin grafts. These procedures properly belong to the reparative phase of surgical management.

Reparative Surgical Management: The reparative phase of burn management is concerned with the removal of hopelessly devitalized tissue and the early application of skin grafts. It seeks to prevent excessive scarring and contractures, but is not concerned primarily with the ultimate cosmetic result.

The patient with extensive deep burns will tolerate frequent short operative procedures better than a single prolonged operation. Excision of burn slough is undertaken at from 10 to 14 days, or when demarcation is evident. If the involved area of deep burn is small, it may be excised and grafted at the same procedure. The excision of larger areas may be associated with considerable blood loss and this should be anticipated with coincident transfusion of whole blood. Significant bleeding at the time of excision of slough is, in itself, an indication to postpone skin grafting. An interval of from 3 to 5 days between excision of slough and skin grafting permits more accurate restoration of hemoglobin values. A clean surgical appearance at this time is the best evidence of an adequately prepared wound.

Skin grafting will be done commonly as a staged procedure during this interval. Systemic penicillin therapy is maintained. Granulating surfaces are prepared for skin grafting by excision of slough and the application of dry fine mesh gauze under pressure dressings for from 3 to 5 days. Split, or Thiersch, grafts are recommended. "Stamp" grafts are acceptable when used to cover

an irregular contour. "Pinpoint", "pinch", or Reverdin grafts are condemned. More complicated grafts, such as full thickness or pedicle grafts, should not be undertaken as part of the program of reparative surgery. It is expected that all areas injured by deep burns will be covered by skin grafts at the end of the fourth week after injury.

Early active motion of epithelialized extremities is to be encouraged. Prolonged immobilization is not usually necessary and contributes to protracted disability.

Complete skin grafting should be done early, even though it be recognized that a more formal plastic operation will be required later. Operative procedures to improve function or for cosmetic effects are the responsibility of special centers for plastic surgery. (TB MED 151, March '45)

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Used Gas Masks for Examination: The Bureau of Medicine and Surgery is anxious to learn the nature of the smoke which arises from fires aboard ship. One method of acquiring such information is to examine the canister, the face piece and hose of Navy service gas masks which have been worn as a protection against smoke created by fire.

Although the Bureau of Ships "Fire-fighting Manual" (Navships 688), 1943 edition, states that the canister of the service gas mask provides protection against smoke only to a limited degree, it is known that in the absence of a BuShips rescue breathing apparatus, men have resorted to the use of the gas mask during fires. It is therefore requested that in such cases medical officers forward to the Bureau of Medicine and Surgery, Research Division, four complete, used, gas mask assemblies which have been used as protection against smoke during fire aboard ship. It is important that these masks not be wiped or cleaned in any manner before shipping. The four assemblies should be accompanied by the following information, if it is available:

1. A brief description of the fire.
2. Proximity of the wearer to the fire.
3. The density of the smoke to which wearer was exposed.
4. The length of time spent in the presence of smoke: (a) without the mask, and (b) after donning the mask.
5. The subsequent physical condition of the wearer, with an opinion as to the degree of protection furnished by the mask.

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The Control of Diseases Due to the Hemolytic Streptococcus: The prevention of streptococcal diseases requires the constant application of the basic principles designed to control the dissemination of respiratory-tract pathogens. Chemoprophylaxis has proved a useful adjunct in preventive medicine provided sulfonamide-resistant organisms are absent. This limiting factor was discussed in the Bumed News Letter of April 13, 1945. The need for chemoprophylaxis to prevent the implantation of the hemolytic streptococcus indicates that the fundamental precautions have been inadequately observed. Primary reliance for the control of the spread of streptococcal diseases must be placed on the recognized sanitary measures. Frequent inspections should be made and appropriate action carried out by medical officers charged with the responsibility of the health and welfare of naval personnel. It is pertinent to review the fundamental sanitary measures, which should be familiar to all, in order to emphasize their importance and applicability to the streptococcal problem.

(a) Proper housing of personnel should be provided according to the standards set forth in the Manual of the Medical Department. When double-deck bunks are used, head-to-foot arrangement is indicated.

(b) Crowding in barracks, mess halls, ship's service, classrooms, swimming pools, theaters, dispensaries and other places where men intermingle in appreciable numbers should be avoided.

(c) Ventilation of quarters should be as free as possible day and night throughout the year, with attention being paid to proper heating and humidity.

(d) Floors must be kept clean. Sweeping should be done in the proper manner using oiled sawdust. The use of steel wool on floors is not recommended. Oiling of wooden floors in barracks, classrooms, ship's services, and dispensaries is highly effective in trapping the dust on the floor and thus reducing the amount of dust and number of bacteria in the air. (See Bumed News Letter of May 26, 1944 and Sept. 29, 1944.)

(e) Frequent airing and sunning of bedding is important. Blankets and clothing should be handled gently to minimize the scattering of bacteria-laden lint and dust particles. Experimental tests with oiled blankets have demonstrated the value of this procedure in diminishing the amount of lint and bacteria shed by them. The Navy is developing and testing oil emulsions to be added to the final rinse of laundered blankets to impregnate them with oil.

(f) Cleanliness in galleys is essential. Food, utensils and dishes must be protected from bacterial contamination. Sanitary standards in dishwashing must be maintained. Adequate refrigeration must be available and utilized. Custards, filled cakes and dishes with mayonnaise dressings should be served soon after preparation. Open milk vats must be eliminated from the chow line and ladling of milk prohibited. The common drinking cup is a menace. Food handlers with upper respiratory infections should be removed from their work, and carriers likewise removed, especially at the time of an outbreak.

(g) Proper segregation of patients with streptococcal diseases is necessary. These patients should not be transported to the hospital in an ambulance with patients who have other types of infectious diseases. Unit dispensaries and hospitals should provide adequate facilities for the care of contagious diseases. Thermometers, atomizer tips, needles, syringes and surgical instruments must be satisfactorily sterilized. Cross infections must be prevented by constant attention to the following measures: good ventilation; clean, well-lighted rooms; adequate bed spacing in properly designed isolation accommodations; the use of adequate equipment conveniently placed for sterilization and disinfection; and a staff trained to maintain careful technic.

A fundamental factor in the dissemination of streptococci arises from the fact that patients with streptococcal tonsillitis and pharyngitis are not given the same careful isolation as are cases of scarlet fever, although they present a similar infection. The revised communicable disease manual of the Public Health Association recognizes this fact and scarlet fever, pharyngitis and tonsillitis are included under the same heading with recommendation for 14 days' isolation. A rational policy in handling streptococcal diseases has been presented by Comdr. Alvin F. Coburn (MC), USNR, in The Military Surgeon of January 1, 1945. He emphasizes the importance of the isolation of all open streptococcal cases until free of infection in order to prevent the dissemination of the hemolytic streptococcus by dangerous carriers. (Prev. Med. Div. - J. K. Curtis)

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Classification and Antigenic Structure of Streptococci: Interest in the classification of the streptococci has been stimulated by recent epidemics of streptococcal disease (outbreaks of scarlet fever) in the Navy. A brief review is therefore considered appropriate.

Streptococci have been classified in the following ways:

1. On the basis of activity on blood agar.
 - (a) alpha, or viridans (methemoglobin producing strains)
 - (b) beta, or hemolytic
 - (c) gamma, or non-hemolytic
2. On the basis of biological activity (Sherman).
3. On the basis of susceptibility to bacteriophage (Evans).
4. On the basis of antigenic structure (Lancefield).

(a) Groups A, B, C, D, E, F, G, H, K, L, and M are distinguished by means of group specific substances, which are polysaccharides immunologically distinct for each group. These groups also have distinguishing cultural characteristics (such as differences in final pH produced in carbohydrate broths, etc.).

The vast majority of human respiratory infections are due to group A organisms, nearly all of which are hemolytic. Groups are detected serologically by precipitin tests, employing absorbed serum from immunized rabbits.

(b) Types within the groups are distinguished on the basis of type-specific substances. For practical purposes, typing is limited to group A organisms of which there are more than 40 known types. Group A streptococci contain two type-specific substances, a protein designated "M" and a substance of undetermined chemical composition designated "T". Types are determined serologically by means of precipitin and agglutination tests, employing absorbed rabbit serum. The precipitin reaction depends entirely on the M substance and its corresponding antibodies, while agglutination may involve the M substance and its antibody, or the T substance and its antibody, or both. For complete antigenic analysis, both the precipitin and agglutination technics must be used, but for epidemiological purposes either method will suffice.

The classification of Lancefield is the one in general use in epidemiological studies. Grouping and typing by the methods of Lancefield are carried out at the Naval Medical School, Bethesda, Maryland, as a part of the Navy's current studies on control of streptococcal infections.

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The Use of a Plasma Protein Fraction in Hemophilia: A substance in the euglobulin fraction in normal plasma which accelerates the clotting of hemophilic blood was demonstrated by Taylor et al some years ago. During the last two years Doctor Taylor has repeatedly tested plasma fractions for the presence of this material and has shown that it is very highly concentrated in Fraction I, and is also present in considerable amount in Fraction III-2.

Some clinical trials, using samples of Fraction I which are rich in this material, have been made under the direction of Dr. George Minot. These tests have shown that the clotting time of patients with hemophilia is reduced practically to normal for a period of several hours following injection of doses ranging from 20 to 100 mg. of protein from Fraction I. (OEMcmr-139. Cohn, Harvard Univ. CMR Bulletin #34.)

* * * * *

Sheathing of the Retinal Veins in Multiple Sclerosis: Rucker has recently observed that sheathing of some of the retinal veins is occasionally encountered on ophthalmoscopy of ocular fundi which otherwise appear normal. This finding is usually indicative of disease of the central nervous system, most often of multiple sclerosis.

Derivenous sheathing visible in the retina has been found both early and late in multiple sclerosis. It has been seen in patients who had had evidence of

multiple sclerosis for only two weeks. As yet none of these patients has been followed over a long period of time. The finding has not been encountered in any type of retrobulbar neuritis other than that due to multiple sclerosis.

The nature of the sheathing is difficult to interpret from ophthalmoscopy alone. As yet there has been no opportunity for pathological examination of the condition. The fundal picture bears a resemblance to a feature observed by a number of pathologists in sections of the central nervous system of persons who died of multiple sclerosis, namely, an accumulation of cells around venules. It is not as yet determined whether this pathology represents a reaction to primary degeneration of nerves or whether the venous disease is primary. Thrombosis of the veins in the retina has not been observed. The sheathing is not the result of a so-called demyelinating process, for the nerve fibers of the retina do not have a myelin covering. (J.A.M.A., April 14, '45)

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Globin Solutions for Use as a Blood Substitute: It is estimated that each year nearly one and one-half million liters of packed red cells could be salvaged from the preparation of plasma for the Armed Forces and for the civilian population. By a relatively simple process, this hemoglobin can be transformed into a "modified globin" at a fraction of the cost of plasma production.

From a blood donation of 500 c.c. it is possible to obtain about 250 c.c. of plasma (about 17 Gm. of plasma proteins) and about 24 Gm. of globin. This globin is equivalent in osmotic power to about 600 c.c. of plasma. Thus from a single 500 c.c. donation of blood it is possible to obtain the osmotic equivalent of about four donations. Investigations have been undertaken to determine more completely the physicochemical, physiological and pharmacological properties of this modified globin. (Am. J. M. Sc., April '45 - Strumia et al)

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The standardization of the process of preparation of globin has proceeded to a point where globin solution can be obtained which, when injected at the rate of 10 mg. per kg. of body weight per minute into humans will produce a fairly constant rate of hemodilution without reactions. Minimal flush reactions may be controlled entirely by the rate of injection.

Thus far, a total of 210 injections of modified globin solution have been given to 108 patients. The largest dose to any one patient has been 6,000 c.c.

It has been definitely ascertained that erythrocytes of all types can be used for the preparation of globin. Further observations have been made on the value of globin as a source of nitrogen for intravenous feeding. The value of globin in

the preservation of re-suspended erythrocytes for intravenous administration has also been studied with encouraging results. (OEMcmr-44 - Strumia, Bryn Mawr Hosp, Pa. - CMR Bulletin #34)

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Effect of Bed Rest on Blood Volume of Normal Men: The effect of three weeks of complete bed rest on the blood volume has been studied in six experiments on five normal young men. In four of these men studies were also carried out during the course of reconditioning after rest. In addition, one of these men was studied before and after the surgical repair of an inguinal hernia.

An average loss in blood volume of 572 cc. (9.3 per cent) occurred during the period of bed rest. This was almost entirely accounted for by a contraction of 518 cc. (15.5 per cent) in the plasma volume. The first week of reconditioning resulted in an increase in plasma volume to pre-bed rest levels but was accompanied by an apparent loss of erythrocytes so that the average increase of blood volume was only 235 cc. The subsequent increase in blood volume to the original level was due entirely to an increase in erythrocytes.

The blood volume change during three weeks bed rest following surgical repair of an inguinal hernia in one man did not differ significantly from the changes observed in the same man after bed rest alone. (OEMcmr-413 - Taylor et al, Univ. of Minn. - CMR Bulletin #34)

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Circulatory Responses to Morphine Administered to Dogs in Shock: In normal unanesthetized dogs, morphine (2 mgm. intravenously) caused a sharp fall in blood pressure and cardiac output, and an increase in peripheral resistance, with gradual return to pre-injection levels in one hour. In some dogs with well-developed hemorrhagic shock, the same dose produced a temporary circulatory improvement (rise in cardiac output, blood pressure and peripheral resistance, and decrease in the difference of arterial and venous blood oxygen) but did not prolong survival. In dogs with traumatic shock, morphine made the condition worse as judged by these criteria.

The difference in response to morphine in hemorrhagic and traumatic shock may be related to the degree of vasoconstriction present. The peripheral resistance is much higher in traumatic than in hemorrhagic shock. The fact that morphine can increase the peripheral resistance after hemorrhage suggests that it produces vasoconstriction in some region (perhaps the splanchnic area) sufficient to produce a temporary improvement in venous return. (OEMcmr-66 - Gregersen, Columbia Univ. - CMR Bulletin #34)

Cancellous Chip Bone Grafts: Mowlem has reported seventy-five cases of cancellous chip grafting for the restoration of contour and of continuity in fractures of facial and cranial bones, mandible and tibia. All have been successful.

Cancellous tissue from the ilium was obtained in the following manner: the ilium was exposed, and its crest and outer plate were freed from their muscular and aponeurotic attachments. A block of bone of sufficient bulk was then removed with an osteotome, and its cortical covering discarded. The remaining cancellous mass was divided into chips of various sizes, usually about 1 by 0.5 by 0.1 cm. The bone chips were applied so that they overlapped the exposed bony margins of the defect as well as each other. No endeavor was made to produce a continuous surface, but care was taken to create a smooth contour. The chips were arranged in at least two layers, those in the outer layer covering the gaps between the chips in the lower layer. The wound was closed without drainage.

Mowlem reports a case in which this technic was employed to fill a cranial defect. Within ten days the whole mass was sound and firmly united. Over a period of three years no absorption has occurred. (Lancet, Nov. 25, '44)

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The Metric System: The fundamental unit of the metric system is the unit of length, the meter; the unit of volume, the liter, is a cube of 1/10 meter side; the gram, the unit of weight, is 1/1,000 the weight of a liter of distilled water at 4° C., its temperature of greatest density.

From the meter and gram are derived, by merely moving the decimal place the scientific measures of length required for geographic distances, the units employed in cytology (μ , microns), those used in the measurements of atomic spacing and radiation (angstrom units), and all metric units of mass and volume. The scientific units of velocity, acceleration, force, energy, work and power are simply and logically derived from the fundamental metric units. The complex units of all the pure and applied sciences may, with the aid of certain conversion constants, be derived step by step without break in logic.

The universal use of the metric system in scientific work, its adoption for general purposes in many countries and its practical simplicity have always been sound reasons for the use of the metric system in medicine.

Announcement by the Council on Pharmacy and Chemistry (J.A.M.A., Dec. 4, '43) that New and Nonofficial Remedies, Useful Drugs, the Epitome of the U.S. Pharmacopeia and National Formulary and Interns' Manual (with the consent of the Council on Medical Education) as well as other Council publications

would henceforth give quantities and dosages exclusively in the metric or centimeter-gram-second system marks a step of no little importance in the progress of rational medicine. The immediate and practical stimulus to the Council in deciding to adopt the metric system exclusively in its publications was the occurrence of serious accidents in dosage due to confusion between the two systems commonly employed.

The Royal Canadian Navy Medical News-Letter has announced that all weights and measures in this publication will be given in metric units. (March 1, '45).

In spite of its unchallenged superiority, the metric system still exists as an ideal to be achieved. Universal adoption of this system would be a manifestation of rationality and of interprofessional and international cooperation of great practical utility.

It should be noted that the Supply Catalog (NavMed 116) utilizes the metric system and that the prescription forms (NavMed 148) are designed for use of it as well.

For the convenience of those medical officers who are more familiar with the apothecaries' system and to encourage wider use of the metric system, tables of approximate equivalents of doses in the two systems are appended.

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TABLES OF APPROXIMATE EQUIVALENTS OF DOSES, APOTHECARIES' AND METRIC SYSTEMS

Weights

Apothecary or Troy	Metric	Apothecary or Troy	Metric
<hr/>			
1 ounce -	30 grams (Gm.)		
4 drams -	15 grams (Gm.)	2/3 grain -	45 milligrams (mg.)
2-1/2 drams -	10 grams (Gm.)	1/2 grain -	32 milligrams (mg.)
2 drams -	8 grams (Gm.)	3/8 grain -	24 milligrams (mg.)
75 grains -	5 grams (Gm.)	1/3 grain -	22 milligrams (mg.)
1 dram -	4 grams (Gm.)	1/4 grain -	16 milligrams (mg.)
45 grains -	3 grams (Gm.)	1/6 grain -	11 milligrams (mg.)
30 grains -	2 grams (Gm.)	1/8 grain -	8 milligrams (mg.)
15 grains -	1 gram (Gm.)	1/10 grain -	6.5 milligrams (mg.)

Apothecary or Troy	Metric	Apothecary or Troy	Metric
10 grains -	0.65 gram (Gm.)	1/12 grain -	5.4 milligrams (mg.)
7-1/2 grains -	0.5 gram (Gm.)	1/16 grain -	4.0 milligrams (mg.)
7 grains -	0.45 gram (Gm.)	1/20 grain -	3.2 milligrams (mg.)
6 grains -	0.4 gram (Gm.)	1/32 grain -	2.0 milligrams (mg.)
5 grains -	0.32 gram (Gm.)	1/64 grain -	1.0 milligram (mg.)
4 grains -	0.25 gram (Gm.)	1/100 grain -	0.65 milligram (mg.)
3 grains -	0.2 gram (Gm.)	1/120 grain -	0.54 milligram (mg.)
2-1/2 grains -	0.16 gram (Gm.)	1/160 grain -	0.4 milligram (mg.)
2 grains -	0.13 gram (Gm.)	1/210 grain -	0.3 milligram (mg.)
1-1/2 grains -	0.1 gram (Gm.)	1/250 grain -	0.26 milligram (mg.)
1 grain -	65 milligrams (mg.)	1/320 grain -	0.2 milligram (mg.)
3/4 grain -	50 milligrams (mg.)	1/640 grain -	0.1 milligram (mg.)

Liquid Measures

<u>Apothecary</u>	<u>Metric</u>
1 pint	480 cubic centimeters (cc.)
12 fluid ounces	360 cubic centimeters (cc.)
8 fluid ounces	240 cubic centimeters (cc.)
6-3/4 fluid ounces	200 cubic centimeters (cc.)
4 fluid ounces	120 cubic centimeters (cc.)
3-3/8 fluid ounces	100 cubic centimeters (cc.)
2 fluid ounces	60 cubic centimeters (cc.)
1-2/3 fluid ounces	50 cubic centimeters (cc.)
1 fluid ounce	30 cubic centimeters (cc.)
5/6 fluid ounce	25 cubic centimeters (cc.)
5-1/2 fluid drams	20 cubic centimeters (cc.)
4 fluid drams	15 cubic centimeters (cc.)
2-2/3 fluid drams	10 cubic centimeters (cc.)
2 fluid drams	7.5 cubic centimeters (cc.)
80 minims	5.0 cubic centimeters (cc.)
65 minims	4.0 cubic centimeters (cc.)
1 fluid dram	3.7 cubic centimeters (cc.)
50 minims	3.0 cubic centimeters (cc.)
45 minims	2.8 cubic centimeters (cc.)

Liquid Measures (Cont.)

<u>Apothecary</u>	<u>Metric</u>
32 minims	2.0 cubic centimeters (cc.)
30 minims	1.8 cubic centimeters (cc.)
20 minims	1.2 cubic centimeters (cc.)
16 minims	1.0 cubic centimeters (cc.)
15 minims	0.9 cubic centimeter (cc.)
12 minims	0.75 cubic centimeter (cc.)
10 minims	0.6 cubic centimeter (cc.)
8 minims	0.5 cubic centimeter (cc.)
5 minims	0.3 cubic centimeter (cc.)
3 minims	0.18 cubic centimeter (cc.)
1-5/8 minims	0.1 cubic centimeter (cc.)
1 minim	0.06 cubic centimeter (cc.)

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Responses in Neurosyphilis to Penicillin: When neurosyphilis is treated with penicillin, the response, as indicated by laboratory tests, is much more rapid and more marked in the spinal fluid than it is in the blood. The response in the blood is delayed, and apart from temporary improvement, is much less likely to be sustained.

A study of the symptomatic responses to penicillin indicates that all the improvement likely to occur will take place in from 90 to 120 days after completion of a course of therapy in a dosage range of from 1,200,000 to 2,400,000 units. The logical time for retreatment, therefore, appears to be between the third and fourth months after a preceding course of penicillin therapy. (OEMcmr-403, Prog. Report #6 - Stokes, Univ. of Pa. - CMR Bulletin #29)

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Booster Doses of Penicillin in Therapy of Subacute Bacterial Endocarditis: In a progress report on the study of 16 cases of subacute bacterial endocarditis treated by penicillin, Baehr states that 13 of the patients have recovered and 3 have died. Two of the latter are considered failures in treatment. There have been no recurrences thus far. Heparin was not employed in 12 of the cases.

The therapeutic problem is considered to have two aspects: sterilization of the blood stream and sterilization of the vegetations. A more or less continuously adequate level of penicillin in the blood may achieve sterilization of the blood stream throughout the course of treatment, yet reinfection of blood

will recur soon unless there has been penetration of the vegetations by the penicillin sufficient to kill off the bacterial therein. A much higher concentration of penicillin would seem necessary to secure adequate penetration into the vegetations than is required for sterilization of the blood. A method has therefore been devised of using "booster doses" of 100,000 units intramuscularly several times a day in addition to the usual dosage of penicillin. The effect of a booster dose was to raise the blood level of penicillin to a very high peak within 20 minutes, e.g., up to 6 units per c.c. of blood serum. A second intramuscular injection of 100,000 units given 20 minutes after the first injection was followed by a still higher rise of the penicillin level of the blood, to as high as 11.6 units per c.c. within 20 minutes after this injection, and the level did not fall below 5 units for more than an hour.

Up to the present time, 6 patients have been treated with booster doses in addition to the usual dosage of penicillin. The experience with these cases indicates that booster doses have served to facilitate permanent sterilization of the blood stream and of the vegetations resulting in recovery from severe, protracted or recurrent infections. (OEMcmr-479, Prog. Report #2 - Baehr, Mt. Sinai Hosp., N.Y. - CMR Bulletin #30)

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The use of penicillin in the treatment of subacute bacterial endocarditis has been discussed in the Bumed News Letters of August 4 and December 22, 1944.

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Inactivation of Penicillin by Gram-Negative Bacteria: Various Gram-negative bacilli commonly found in infected wounds were found to be very resistant to the action of penicillin in concentrations up to 20 units per c.c. Higher concentrations of from 2,000 to 5,000 units per c.c. produced a definite bacteriostatic effect. Alkaligenes fecalis, on the other hand, was found to be very sensitive to penicillin.

The activity of penicillin was progressively destroyed by the growth of these bacteria, particularly E. coli and Ps. aeruginosa. The rate of destruction was greatest after eight hours. The degree of inactivation varied not only with the different types of bacteria but also with different strains of the same type.

The mechanical removal of devitalized tissue and purulent exudate, followed by the topical application of penicillin in concentrations up to 1,000 or 2,000 units per c.c. at frequent intervals (8 hours or less), is suggested in the

local therapy of infected wounds to minimize the inactivation of penicillin by Gram-negative bacteria. (OEMcmr-62 - Altmeier, Univ. of Cincinnati - Ms. for publication. CMR Bulletin #27)

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Rehydration of Dehydrated Survivors: In order to determine the most effective method of rehydration of castaways by fresh water, such as rain water, studies were carried out on volunteers who were (1) thirsting and fasting, (2) fasting without thirsting, and (3) thirsting with a small food intake.

The data indicate that in the starved, dehydrated survivor, ingestion of water alone fails to repair completely the fluid deficit, the lack of inorganic electrolytes being the factor which limits water retention. Under these circumstances, the addition of small amounts of sea water to rain water for drinking is beneficial, but no more than 1 part of sea water to 3 parts of fresh water should ever be used. If carbohydrate or salt (food or sea water) has been ingested during the period of dehydration, supplementary sea water is neither necessary nor desirable with the fresh water.

Water loss from thirsting, in the presence of a small intake of carbohydrate, results in an increase in concentration of extracellular fluid electrolytes. This is reparable by water alone to a greater extent than is a comparable deficit produced by thirsting and fasting. The data indicate that the effect of carbohydrate in conserving sodium is larger and of more importance in the physiology of body fluid than can be explained by its protein-sparing effect alone. (OEMcmr-478 - Butler and Gamble, Mass. Gen. Hosp. - CMR Bulletin #34)

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The Neurovascular Syndrome Produced by Hyperabduction of the Arms: Wright has observed patients who have developed numbness, paresthesia, trophic changes, and even gangrene of the tips of the fingers as a result of prolonged hyperabduction of the arms while sleeping or working. These patients were studied to rule out the possibility of various diseases, including: Raynaud's syndrome, thromboangiitis obliterans, intrinsic and extrinsic tumor of the cervical cord, ruptured nucleus pulposus in the cervical area, infectious polyneuritis, ulnar and median nerve injury, cervical rib and scalenus anticus syndrome.

It was demonstrated that hyperabduction of the arms resulted in obliteration of the arterial pulse. The question was raised as to whether this constituted a normal or an abnormal phenomenon. An investigation of 150 young adults revealed that obliteration of the pulse could be produced in each arm in approximately 83 per cent of individuals.

The mechanisms which play the most important part in causing this condition are believed to be the stretching of the brachial plexus and the subclavian axillary vessels under the coracoid process, with some degree of pinching produced by tightening of the pectoralis minor muscle, and pinching of the vessels and nerves between the clavicle and the first rib. Either mechanism or a combination of both may produce this syndrome. These normal anatomic arrangements occurring in the majority of individuals are capable of producing a pathologic syndrome after prolonged hyperabduction of the arms. This syndrome is to be differentiated from the cervical rib and scalenus anticus syndromes. (J. Lab. & Clin. Med., April '45)

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Efficacy of Some Therapeutic Agents for Tularemia: The use of antiserum in the treatment of tularemia has had extensive clinical and experimental trials, but the results have been inconclusive. The data which Foshay obtained from treating humans led him to believe that the use of serum effects a significant reduction in morbidity and mortality; Hillman and Morgan found that the use of this antiserum in an outbreak of tularemia was without striking results. Francis and Felton concluded that antitularemic sera prepared from horses, sheep and rabbits, as well as from convalescent humans, showed no evidence of protective effect in white mice.

The reports concerning use of the sulfonamide compounds in treating tularemia have also been conflicting. Few well-controlled laboratory studies of the efficacy of these compounds in treating tularemia have been reported.

Various clinicians have reported satisfactory results in the treatment of tularemia by any one of several agents which have included neoarsphenamine, ferrous iodide, metaphen, acriflavine and autogenous vaccines.

In controlled experiments Bell and Kahn have tested the following therapeutic agents in the treatment of experimental tularemia in guinea pigs: sulfanilamide, sulfadiazine, sulfamerazine, acriflavine, metaphen, iodide and bismuth (iodobismutol with saligenin), arsenic and bismuth (bismuth subgallate and sodium paraminophenyl arsonate), trivalent arsenic alone (mapharsen), antimony (stibophen), penicillin and hyperimmune equine antitularemic serum. All of these substances, with the possible exception of penicillin, were used in amounts which proportionately exceeded the doses given patients. From their results they conclude that none of these agents is effective in treating tularemia. (Arch. Int. Med., March '45)

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Provocative Prolongation of the P-R Interval in Rheumatic Fever: Various investigators have shown that the prolongation of the P-R interval in patients with rheumatic fever frequently can be abolished by atropine. This suggests that the impairment of atrioventricular conduction may, in many cases, be due to a heightened vagal effect rather than to an intrinsic defect in the conduction mechanism. Gubner et al have presented a study indicating an increased sensitivity to vagal stimulation in patients with rheumatic fever as further evidence for this view. This does not necessarily signify a greater vagal tone as such. The action of the vagus is determined, not only by the release of acetylcholine, but also by the rate of destruction of acetylcholine by the tissue enzyme, cholinesterase, as first shown by Loewi and Navratil.

The activity of cholinesterase is greatly modified by the pH, its action being maximal in an alkaline medium and falling sharply as the pH shifts toward the acid side, as Glick has demonstrated. Gubner et al suggest that in rheumatic fever the inflammatory process and vascular changes in the region of the conduction system, by lowering the pH and interfering with tissue nutrition, inhibit cholinesterase, thus increasing the vagal effect which is responsible for prolongation of atrioventricular conduction.

Impairment of atrioventricular conduction of considerable degree was induced in 12 of 16 subjects with rheumatic carditis by pressure on the carotid sinus. Similar pressure did not produce such impairment in 16 control subjects who had various infectious diseases including scarlet fever, pneumonia and upper respiratory infection. The effect was more marked when the initial P-R interval was from 0.18 to 0.20 second than when it was less than 0.18 second. It appeared that vagal stimulation intensified a latent impairment in atrioventricular conduction.

The changes in conduction were maximal during the acute stages of carditis and tended to disappear as rheumatic activity subsided. Prolongation occurred more commonly when the patient was sitting rather than recumbent, and more often with left than with right carotid pressure. The preliminary administration of prostigmin augmented the response in many cases. These investigators suggest that this procedure may enhance the diagnostic value of prolongation of the P-R interval in rheumatic fever. (Am. J. M. Sc., April '45)

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New BuMed Publications:

Diet Formulary, NavMed 502: This is the first professional treatise on diets and nutrition prepared by the Bureau of Medicine and Surgery. The manual measures 5-3/8" x 8-1/4", is bound in a water- and grease-repellent cover and contains 102 pages with index. The contents include a general discussion covering in part: caloric contents of diets, height and weight tables for men

and women, carbohydrate contents, vitamins, minerals, equivalents, allowances, etc. The principal section is devoted to special diets in various diseases. Initial issue has been made to all medical officers, and stock for subsequent issue is available at the U. S. Naval Medical Supply Depot, Brooklyn, New York.

A Synopsis of the Philippine Mosquitoes, NavMed 580: This is a manual 7-7/8" x 10-1/4" having a stiff cover and containing 98 pages. The contents consist of an introduction, key to the genera of Philippine mosquitoes, brief descriptions and epidemiologic discussion of the various species of the Philippine genera, an index to genera, species and subspecies, and 10 pages of anatomical figures for identification. The work was carefully prepared and is up to date. Distribution has been made to medical and H(S) (epidemiology) officers having FPO, San Francisco, California, addresses.

Epidemiology of Diseases of Naval Importance in China, NavMed 630: This is a "Restricted" publication 7-7/8" x 10-1/4" having 221 pages and a stiff cover. The purpose of this manual is to present to medical officers a condensed picture of the prevalence, distribution and epidemiology of infectious diseases of naval importance in China, together with information on the distribution, habit and identification of vectors and reservoir hosts. The contents include an introduction, with tables showing distribution of population, hospitals and medical workers, and distribution of physicians in certain large cities of China; 20 chapters devoted to the most common endemic diseases, and an appendix on mosquitoes, flies, midges, fleas, ticks, poisonous snakes and intestinal parasites. Primary emphasis is placed on those diseases which could involve large numbers of naval personnel and which may present epidemiologic and control problems different from those experienced elsewhere. Distribution has been made to medical, Hospital Corps and H(S) officers having FPO, San Francisco, California, addresses.

Notes on Water Supply Ashore, NavMed 632: This is a manual 7-7/8" x 10-1/4", with a stiff cover and 34 pages, produced in limited number for use by classes in military medicine as a guide in water sanitation. This manual discusses problems relating to the sanitation of water, including supply and source, purification and defects in water systems. It is a pre-printing of a section which will appear in the Manual of Naval Hygiene now being revised. Distribution has been made to the existing naval schools teaching military medicine.

Notes on Waste Disposal, NavMed 638: This manual contains 22 pages of text and drawings, and measures 7-7/8" x 10-1/4", and is bound in a stiff cover. Methods and responsibility for waste disposal are discussed, including human excreta, liquid waste or sewage and refuse. Distribution of a limited number of copies has been made for use in classes in military medicine. This manual is a pre-printing of a section which will appear in the Manual of Naval Hygiene now being revised.

Asiatic Schistosomiasis, NavMed 642: This is a "Restricted" manual, 7-7/8" x 10-1/4" with self cover, 14 pages of text, illustrations and distribution. Its purpose is to present a concise, authentic summary of useful information on Schistosomiasis to the responsible officer personnel of the Medical Department of the Navy. Primary distribution has been made to medical and H(S) officers having a FPO, San Francisco, California, address. This manual was prepared as part of the "Snail Fever" prevention program and will be issued by the U. S. Naval Medical Supply Depot, Oakland, California, to naval activities in the Pacific Area.

Louse Control, NavMed 653: This manual measures 7-7/8" x 10-1/4" with self cover, having 19 pages of text and illustrations intended to present to the personnel of the Medical Department a concise guide to the prevention and elimination of louse infestation. The contents consist of two sections devoted to the louse and prevention of infestation, and modern methods of delousing personnel and equipment. This includes the latest information on the use of DDT, including methods of dusting clothing while being worn, etc. An appendix covers precautions in handling methyl bromide fumigation and symptoms of poisoning, and lists the lousicides and equipment which are available through the Supply Catalog. This manual will be included as a section in the Manual of Naval Hygiene now undergoing revision. Distribution of "Louse Control" was made to all commissioned officers of the Medical Department. (Pub. Div., BuMed - G. G. Strott)

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Public Health Foreign Reports:

<u>Disease</u>	<u>Place</u>	<u>Date</u>	<u>Number of Cases</u>
Plague	Ecuador	Feb. '45	2 (2 fatal)
	Madagascar	Feb. 11-20, '45	10
	Morocco (French)	March 1-10, '45	12
Smallpox	Belgian Congo	Jan. 6-13, '45	200
	India	Feb. 17-24, '45	379 (298 fatal)
	Nigeria	Feb. 3-10, '45	156 (21 fatal)
	Venezuela	March 10-17, '45	80
Typhus Fever	Algeria	Feb. 11-28, '45	195
	Ecuador	Feb. '45	28 (5 fatal)
	Egypt	Feb. 10-17, '45	598 (48 fatal)
	Moldavia	Feb. '45	Epidemic
	Morocco (French)	March 1-10, '45	365
	Turkey	March 10-17, '45	90
Yellow Fever	Gold Coast	March 18, '45	1 (suspected, fatal)
	Peru	March 20, '45	1

(Pub. Health Reps., April 13, '45)

To: All Ships and Stations.

BuMed-Y-HS

Subj: Immunization against Yellow Fever.

P2-3/P3-1

15 Mar 1945

Refs: (a) BuMed ltr P2-3/P3-1(074), of 13 May 1941; N.D. Bul. Cum. Ed. 1943, 41-2027, p. 397.
(b) BuMed ltr P2-3/P3-1(074), of 6 Aug 1941; N.D. Bul. Cum. Ed. 1943, 41-2030, p. 402.
(c) BuMed ltr P2-3/P3-1(074), of 21 May 1942; N.D. Bul. Cum. Ed. 1943, 42-51, p. 427.

1. This directive supersedes references (a) and (b).
2. It is directed that Navy and Marine Corps personnel, civilian personnel traveling under the cognizance of the Navy Department, and dependents of naval personnel shall be immunized against yellow fever when being transferred to or traveling through defined areas where yellow fever is endemic. The vaccine shall be given, if practicable, 10 days prior to arrival.
3. Defined areas are as follows:
 - (a) In Africa and adjacent islands between 20° north latitude and 13° south latitude.
 - (b) In South America between 13° north latitude and 30° south latitude.
4. Yellow-fever vaccine may be procured by submitting a separate NavMed Form 4 to medical supply depots or by letter to the distribution centers listed below:

Medical Supply Depot, Brooklyn, New York
Medical Supply Depot, Oakland, California
Dispensary, Navy Yard, Portsmouth, New Hampshire
Dispensary, Navy Yard, Boston, Massachusetts
Dispensary, Navy Yard, New York, New York
Dispensary, Navy Yard, Philadelphia, Pennsylvania
Dispensary, Norfolk Navy Yard, Portsmouth, Virginia
Dispensary, Puget Sound Navy Yard, Bremerton, Washington
Dispensary, Navy Yard, Pearl Harbor, Hawaii
Dispensary, Naval Air Station, Jacksonville, Florida
Dispensary, Naval Air Station, Pensacola, Florida
Dispensary, Naval Air Station, San Juan, P. R.
Dispensary, Naval Training Station, Great Lakes, Illinois
Dispensary, Naval Training Station, San Diego, California
Dispensary, Submarine Base, Coco Solo, Canal Zone
Dispensary, Naval Station, Guantanamo Bay, Cuba
Dispensary, Washington, D. C.
Post Dispensary, Marine Barracks, Quantico, Virginia
U. S. Naval Hospital, Newport, Rhode Island
U. S. Naval Hospital, Annapolis, Md.

All ships and stations in the vicinity of the above-named activities shall procure their vaccine by having a responsible representative apply for it in person.

Advanced base activities shall be supplied from the nearest overseas medical supply depot or storehouse.

5. Medical supply depots and other issuing activities shall be responsible for the proper storing, packing and shipment of yellow-fever vaccine and shall take necessary steps to insure that the vaccine is kept at or below a maximum temperature of 4°C . (39°F .) while in transit, and shall notify the requesting activity as to expected time of arrival. The vaccine, after being received, shall be refrigerated immediately and kept at or below a maximum temperature of 4°C . (39°F .).

6. The ampules of yellow-fever vaccine supplied are of two sizes, one containing 5 cc. and the other 1 cc. of the concentrated vaccine. Each 5-cc. ampule is provided with a rubber-stoppered bottle containing 55 cc. of physiological sterile saline solution. Each 1-cc. ampule is accompanied by a smaller bottle which contains 11 cc. of the saline solution. The 5-cc. ampule, when diluted with the saline in the manner described below, will provide 55 cc. of diluted vaccine, sufficient for more than 100 injections. The 1-cc. ampule diluted with 11 cc. of the sterile saline solution is sufficient for more than 20 injections. Diluted vaccine which remains unused after 3 hours must be discarded. While performing vaccinations, the ampule containing the diluted vaccine should be surrounded by ice, or other means of cooling.

7. The technic of dilution and injection is as follows:

(a) Using the large (5-cc.) ampule. When ready for use, sterilize, file, and break the neck of the ampule. Paint the rubber cap on the salt solution bottle (55 cc.) with tr. iodine. With a sterile needle and syringe, remove through the rubber cap 5 cc. of the salt solution and add this to the desiccated virus in the ampule. Suspend the vaccine in the saline solution by shaking the ampule or by gently forcing the fluid in and out of the syringe. When the vaccine has been completely suspended, draw the entire contents of the ampule into the syringe and inject this 5 cc. into the salt solution remaining in the saline bottle. This will provide 55 cc. of an approximately 1:10 dilution of yellow-fever vaccine which is ready for use. Prepare the skin at a suitable area on the arm with alcohol or ether and inject subcutaneously 0.5 cc. of the diluted vaccine.

(b) Using the small (1-cc.) ampule. Open the small (1-cc.) ampule in the same manner and using the same aseptic precautions as described above. Remove 1 cc. of the saline solution from the 11-cc. saline bottle. Suspend the desiccated vaccine in this 1 cc. of saline as above. Inject this concentrated vaccine into the 11-cc. bottle of saline and mix thoroughly as above described. This will give about 11 cc. of approximately 1:10 dilution of yellow-fever vaccine which is ready for use:

8. Technic of vaccination:

(a) Initial vaccination - one subcutaneous injection of 0.5 cc. of the diluted vaccine.

(b) Routine booster (or stimulating) vaccination - one subcutaneous injection of 0.5 cc. of the diluted vaccine 4 years after the initial vaccination if in endemic areas as defined.

(c) Emergency booster vaccination - one subcutaneous injection of 0.5 cc. of the diluted vaccine in the presence of an epidemic and when in the opinion of the medical officer the risk of infection is serious.

9. Reaction: A very mild febrile reaction may occasionally be noted in from 4 to 7 days following the injection, but the reaction is so mild it seldom interferes with routine duties.

10. The following data shall be recorded on the Immunization Sheet of the Health Record:

- (a) Name of vaccine
- (b) Lot number
- (c) Date of vaccination
- (d) Signature of medical officer

11. The following precautions shall be observed:

- (a) Every precaution must be taken to avoid giving the vaccine undiluted.
- (b) After an ampule of vaccine has been diluted, any vaccine which remains unused after 3 hours shall be discarded.
- (c) Yellow-fever vaccine shall be diluted and injected only by medical officers.
- (d) Yellow-fever vaccine shall not be given concurrently with smallpox vaccine. When both of these vaccinations are to be administered, it is suggested that yellow-fever vaccine be given first and that at least 5 days elapse before the smallpox vaccination is done.

--BuMed. Ross T. McIntire.

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To: All Ships and Stations.

BuMed-T
L8-2(072)

Subj: Medical Stores Requisition, NavMed-4 - Preparation and Submission of.

15 Apr 1945

Refs: (a) Arts. 1164, 1165, and 1166, Navy Regulations.
(b) Ltr BuMed-T-RLJ, L8-2(072), of 1 May 1944; AS&SL Jan-Jun 1944, 44-549, p. 372.
(c) Ltr BuMed-T, L8-2(072), of 14 Jun 1944; AS&SL Jan-Jun 1944, 44-684, p. 416.

1. This letter supersedes reference (c).

2. Effective upon receipt of this letter, requisitions for medical stores (supplies and equipment) listed in the Medical Supply Catalog shall be prepared in quintuplicate in accordance with instructions contained herein and submitted in quadruplicate on NavMed-4 (requisition and invoice for medical supplies and equipment) direct to the nearest naval medical supply depot or storehouse.

3. A separate NavMed-4 requisition shall be prepared for the following groups of items:

- (a) Biologicals, except serum albumin (stock No. S1-1945).
- (b) Precious metals for dental use.
- (c) Other dental items (classes 11, 12, S11, and S12).
- (d) Remaining Medical Supply Catalog items.
- (e) All items not listed in the Medical Supply Catalog.

4. Medical Supply Depots are located at Brooklyn, N. Y.; Oakland, Calif.; Balboa, C. Z., and Pearl Harbor, T. H. Continental Medical Supply Storehouses are located at Newport, R. I.; Norfolk, Va.; Charleston, S. C.; New Orleans, La.; Seattle, Wash.; San Pedro, Calif.; and San Diego, Calif.

5. Continental medical supply storehouses do not carry all Medical Supply Catalog items. Items carried by them will be indicated in the catalog by a symbol (letter "w"). In the near future instructions will be distributed to the field indicating the items carried by continental storehouses. Each activity, upon receipt of these instructions, shall insert the letter "w" in the symbol column of the catalog opposite the names of the appropriate items.

6. Continental storehouses are authorized, within the limits of their stock, to make issues to any naval medical department activity. In view of the limited stock in the storehouses, the larger shore stations and naval hospitals shall submit their periodic replenishment requisitions to the nearest naval medical supply depot.

7. Timely submittal of requisitions shall be made in anticipation of needs. Except in emergencies, medical stores shall not be requested by dispatch. No confirming NavMed-4 is required when medical stores are requested by dispatch.

8. Requisitions shall be prepared for Medical Supply Catalog items in accordance with the following instructions. The data required in subparagraphs (a) to (1), inclusive, shall be entered on each sheet of the requisition.

FACE (NAVMED-4)

(a) U. S. Enter the official name of the requisitioning activity and the mail address. Vessels shall enter class and number after name. Example: (BB6).

(b) DATE: Enter the date prepared.

(c) REQUISITION NO: Requisitions shall be numbered consecutively in a separate series for each fiscal year, preceded by the letters "S.D." and followed by the last two digits of the fiscal year. Example: S.D.-1-40, S.D.-2-40, S.D.-3-40; etc.

(d) ALLOTMENT NUMBER: Leave blank.

(e) TOTAL ALLOTMENT: Leave blank.

(f) PREVIOUSLY OBLIGATED: Leave blank.

(g) ESTIMATED COST THIS REQUISITION: Leave blank.

(h) AVAILABLE BALANCE: Leave blank.

(i) AVERAGE COMPLEMENT: Enter average number of persons entitled to naval medical treatment except when prohibited by security instructions. Continental activities shall show the number of service personnel after the symbol (S); the number of civil personnel after the symbol (C); and hospitals the number of patients after the symbol (P).

(j) ACCOUNT NUMBER: Enter the accounting number assigned the ship or station in the "LIST OF ACCOUNTING NUMBERS FOR SHIPS AND STATIONS," published by the Bureau of Supplies and Accounts. This number may be obtained from the supply officer. If unobtainable, leave blank; the issuing medical supply depot or storehouse will supply the correct number for use on subsequent requisitions.

(k) RESERVE FOR NMSD, BROOKLYN: Leave blank.

(l) CODE NUMBER: Enter code number assigned to your activity as indicated on previous requisitions.

(m) BOX NUMBER: Leave blank. The issuing medical supply depot or medical supply storehouse shall indicate in this space the number of container in which each item is packed. One or more copies of the requisitions shall be used as packing copies according to whether the material is for continental or overseas shipment.

(n) ITEM NUMBER: Each item of the entire requisition shall be numbered consecutively, beginning with 1.

(o) STOCK NUMBER: The stock number of each item, as indicated by the supply catalog, shall be entered in this column on the same line on which the name of the item begins. Items and stock numbers shall be arranged in the exact order in which they appear in the supply catalog. The stock class number and name shall be typed at the head of each class of items requested. Double space shall be left between each class of items.

(p) ITEM: List each item requested, beginning on the same line with the stock number, exactly as shown in the supply catalog, except that information contained in parentheses may be omitted. Indicate the electric current on which electrical apparatus will be required to operate, stating the voltage and type of current (A.C. or D.C.). If alternating current, state also cycles and phase. Example: 110-volt, DC; 220-volt, DC; 110-volt, 60-cycle, 1-phase.

(q) UNIT: Enter on the same line with the stock number and the first line of the item description, the "unit of quantity" as stated in the supply catalog ("One," "Pair," "Dozen," "Pkg," "100-gm bot.," etc.).

(r) MINIMUM STOCK: Substitute the words "on order, not received". Enter quantities previously requisitioned but not yet received.

(s) ON HAND: Enter the quantity of the item on hand as indicated by the stock ledger and verified by recent inventory. Material expended from the stock ledger, such as part bottles, etc., in the pharmacy, is not to be included.

(t) REQUIRED: Enter the quantity required. In the event

the quantity on hand considerably exceeds the maximum stock quantity (see Manual of the Medical Department), as may be necessary for some specific purpose, an explanatory note must be made on the reverse of the form to justify the apparent excess quantity requisitioned. Special care shall be observed to avoid requesting excessive quantities of biologicals, X-ray films, and other similar items which deteriorate within comparatively short periods. When practicable, items shall be requested in package or case multiples to eliminate unnecessary repacking and handling, and to reduce time and cost of issues.

(u) VALUE: Leave blank.

(v) PAGING: When the listing of items required exceeds one sheet, each sheet shall be serially numbered near the bottom.

(w) SIGNATURE: Requisitions from ships and stations shall be signed by the senior medical department representative (from hospitals by the accounting officer) and approved and forwarded by the commanding officer.

(x) COPIES, DESIGNATION OF: The requisitioning activity shall designate the respective copies as follows:

Ribbon copy:	"original"
Duplicate:	"second"
Triplicate:	"third"
Quadruplicate:	"fourth"
Quintuplicate:	"fifth" (file copy)

REVERSE (NAVMED-4)

(y) SHIPPING INFORMATION: The second copy will accompany the bill of lading.

(z) EXPLANATORY REMARKS: Indicate urgent need and specific delivery dates desired. State need for apparent large quantities of supplies or additional items of equipment. Explain need for nonlisted items and reason catalog items will not suffice. Enter reference to property survey when requesting replacement of equipment.

9. NONLISTED ITEMS: When medical stores (supplies and equipment), not listed in the Medical Supply Catalog are required, a separate NavMed-4 requisition shall be prepared and forwarded to the Materiel Division, Bureau of Medicine and Surgery, Sands and Pearl Streets, Brooklyn 1, N. Y. The same procedure shall be followed in the preparation of NavMed-4 requisitions for nonlisted items as that outlined in paragraph 8 above, except under "Stock No." the appropriate class shall be substituted for stock number. Example: "NL-3," "NL-5," "NL-12," etc. When replacement parts or accessories for X-ray, electrically operated, or other equipment are required, an adequate description of the part and of the equipment item for which the part is required, or with which the accessories are to be used, must be stated, including the make, model, serial number, part number, or such description as may be available, including electric-current data, when indicated, in order to enable the Materiel Division

to determine accurately the material required. Requisitions for nonlisted books (NL-15) shall state the exact title, author, edition, publisher's name, and list price of each book. Incomplete description of nonlisted material necessitates considerable needless correspondence and procurement delays. As a general rule, in the case of nonlisted material, several makes of an item are available in the market, and competitive bidding is required. Therefore, commercial catalog references must be construed as descriptive but not restrictive, unless sufficient justification is furnished for proprietary purchase. Each requisition for nonlisted (noncatalog) items shall be accompanied by a statement explaining why catalog items will not meet the requirements or answer the purpose. Prepare six and forward five copies of NavMed-4 for NL items.

10. INVOICES - NAVMED 255 AND 259: Upon receipt of requisitions (NavMed-4 depots and continental storehouses shall mechanically reproduce sufficient numbers of copies of Medical Stores Invoices, NavMed 255 (a form consisting of an original and five attached copies) for domestic shipments or NavMed 259 (a form consisting of an original and eight attached copies) for overseas shipments, to cover all conditions of shipment. Each invoice shall show quantities shipped, unit prices, extensions, class totals, and grand totals. Distribution of copies of NavMed 255 shall be made as follows:

Original: To the requisitioning activity for receipt and return to the issuing activity for transmittal to Materiel Division.

Second: To the Materiel Division for transmittal to Finance Division, BuMed - mail as soon as completed.

Third: To the requisitioning activity for its files.

Fourth: To the Materiel Division with second copy.

Fifth: For use in preparing transfer requisitions.

Sixth: For issuing activity's files.

Distribution of copies of NavMed 259 (formerly NavMed 255-0), shall be the same as for NavMed 255 except that the seventh, eighth, and ninth copies shall be used as additional information copies for consignees and transshipping agencies.

11. COPIES OF INVOICES FOR BUMED: All copies of Medical Stores Invoices, NavMed 255 and 259, required by BuMed will be supplied by medical supply depots and storehouses preparing them. Requisitioning activities shall not send to BuMed after receipt of stores any priced and extended copies of NavMed-4, NavMed-255, or NavMed-259.

12. SHORTAGE, LOSS, DAMAGE, ETC., OF MEDICAL STORES: Upon receipt of a shipment, if any apparent shortage, overdelivery, or other error is found in comparing the invoice or packing copy of the requisition, a full report thereof

shall be made to the issuing depot or storehouse. If the issuing activity does not accept responsibility for the discrepancy, the stores shall be taken up as invoiced and shortages adjusted on the books of the receiving activity by expending supplies or surveying equipment (NR, ch. 49, sec. IID. In case of missing narcotics, also comply with Navy Department Bulletin, article 44-102. When medical stores are lost or damaged by a Government or commercial carrier, the procedures outlined in art. 1903 of the BuS&A Manual and art. 1840-5 of BuS&A Memoranda, shall be complied with. When medical stores in transit are lost by enemy action, the procedures outlined in art. 1120(4) and 1130(6), BuS&A Manual, shall be complied with.

13. MEDICAL STORES FURNISHED TO OTHER U.S. GOVERNMENT ACTIVITIES: For reimbursement between appropriations, medical stores furnished to other U. S. Government activities shall be issued on Invoice SandA Form 127. Six copies of this form shall be prepared and distributed as follows:

Original: To requisitioning activity to be receipted and returned to issuing activity.

Second: To requisitioning activity to be receipted and returned to issuing activity.

Third: Requisitioning activity's file.

Fourth: To Materiel Division, BuMed.

Fifth: Requisitioning activity's file.

Sixth: Issuing activity's file.

14. DEFENSE-AID ISSUES: Defense-aid issues are those made to foreign nations eligible to receive aid from the U. S. Government. When time will not permit reference to Materiel Division, BuMed, depots and continental storehouses may make emergency defense-aid issues of medical stores. Such issues shall be made on BuS&A Form 127, three copies of which shall be receipted by an authorized agent of the foreign government concerned, and forwarded to Materiel Division, BuMed. These copies shall be clearly marked "Defense Aid Issue." See Chapter 30, BuS&A Memoranda, art. 3030-7, for detailed instructions. --BuMed. Ross T. McIntire.

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RESTRICTED

To: All Ships and Stations.

Subj: Processing of Repatriates.

Pers-2-LD
A16 2

BuMed-R-lg
QW20/A14-6
13 Apr 1945

1. For the purposes of this letter, United States Navy personnel who are returned to allied military control following capture by enemy forces, evasion of capture in enemy or enemy-held territory are classified as and hereinafter referred to as repatriates.

2. In view of the fact that repatriates have, in almost every instance, encountered and survived extreme difficulties and harrowing experiences, it is the policy of the Navy Department to accord them special treatment and consideration upon their return. However, this policy is subject to special requirements of security, and special instructions for interrogation and briefing will be issued separately through operational command channels.

3. In keeping with the policy expressed above, repatriates who have been out of United States control for periods of 60 days or more shall, if they so desire, be returned to the United States by the earliest available transportation, and shall have priority in return over all classes of personnel except those returning on account of disability or urgent need of the naval service. Repatriates who have been out of United States control for less than 60 days may be returned to the United States or retained in the theater of operations in the discretion of the responsible commander concerned.

4. While awaiting transportation, such personnel shall be processed as far as practicable, to the end that they may be put in a leave status as soon after return to the United States as may be possible.

5. The following shall govern the medical processing of subject personnel:

(a) When such personnel first come under U. S. naval jurisdiction, they shall be referred to the nearest available naval medical facility for appraisal of their physical and mental health and admission to the sick list if necessary. (If the condition of the individual will permit return to the U. S. before complete medical processing, that should be the first consideration.) At the time of admission to the sick list and/or medical processing, a complete history and physical examination shall be made. Results of this procedure shall be recorded in the newly opened health record and on NMS Form Y. The words "special report - repatriate" shall be typed on the top of this form. In completing this form, emphasis should be made of the following:

(1) An accurate history of all illnesses or injuries incurred during the period involved.

(2) An accurate description of all physical defects found.

(3) A record of the positive findings of all laboratory and other procedures (X-ray, electrocardiogram, etc.) The original of the special Form Y recording this examination shall be sent to BuMed as soon as all of the indicated laboratory and other medical procedures are completed.

(b) Wherever possible, medical processing and treatment should reach a point enabling subject personnel to be granted leave immediately upon arrival in the continental United States. No such leave shall be granted until the individual concerned has been certified by a naval medical officer as physically and mentally qualified for such leave and as requiring no immediate hospitalization.

(c) The medical screening of subject personnel prior to their being granted leave in the United States shall include, in addition to routine clinical study, observation for vermin infestation, laboratory study for amoebiasis and other intestinal infections, X-ray chest study for tuberculosis, serologic test for syphilis, and wherever indicated by reason of locality, study of blood smears for malarial parasites. An individual found to be harboring any such infection, which may be of public-health significance, shall not be granted leave in the United States until he has received appropriate treatment.

(d) Those individuals requiring medical treatment which can be prescribed and self-administered should be recommended for leave upon reaching the United States. Their leave orders shall specify that they report in to the naval hospital, for further observation and disposition, upon expiration of leave.

(e) Those individuals requiring hospitalization or additional medical screening shall be admitted direct to a continental United States naval hospital in the vicinity of the port of debarkation and further processed, in accordance with the provisions of BuPers Circular Letter No. 296-44 or of BuPers Circular Letter No. 196-43, except that rehabilitation leave may be granted up to ninety days.

(f) In considering appropriate disposition of those individuals requiring prolonged hospitalization due consideration shall be given to the wishes of the individual. Likewise, (1) if the individual is to be returned to duty, full use shall be made of facilities for rehabilitation and furthering professional training; (2) if the individual is to be separated from service, full use shall be made of facilities for rehabilitation and civil readjustment; and (3) those enlisted personnel who will be physically qualified for limited duty only will be recommended for discharge from service if they so desire; and (4) those who are physically qualified for service but unsuited for further duty for other reasons may be reported upon by a board of medical survey under the diagnosis "No disease" (Unsuited for further naval service) and recommended for discharge.

6. The following shall be the procedure for the settlement of the accounts of such personnel:

(a) Paymasters are authorized to arrange pay accounts of subject personnel in accordance with Alnav 221, of 14 December 1944.

(b) The Mobile Personnel and Settlement Unit is likewise authorized to make payments in accordance with Alnav 221, of 14 December 1944. This Unit, composed of representatives of the Bureau of Supplies and Accounts, the Bureau of Naval Personnel, and the Office of Shore Establishments and Civilian Personnel, has been sent into the Pacific areas. One of its purposes is to settle in the field the accounts and claims of personnel who intend to remain in the Pacific

area as well as of repatriates whose accounts and claims can be processed conveniently in the field while awaiting transportation. This Unit is also authorized to settle claims, including dependents' benefits, of dependents of naval personnel in those instances in which such dependents reside in liberated areas outside of the continental limits of the United States. It is not intended that personnel should be processed by the Unit, where such processing would not be essentially a convenience to them and in accordance with their desires.

7. The following shall govern the further disposition of subject personnel:

(a) Upon return to the United States, repatriates who have been out of United States control for extended periods may be granted as much as 90 days' rehabilitation leave, provided they are medically qualified for such leave. Upon completion of leave, they will be ordered to the naval hospital nearest their home or leave address for medical survey to determine their physical fitness for duty.

(b) With respect to promotion, the policy of the Bureau of Naval Personnel is to give to returned officer and enlisted personnel who have, in the course of honorable service, fallen into the hands of the enemy as prisoners of war or who have escaped from such custody or evaded capture, special consideration in order to place them as soon as they are individually qualified, in the rank or rating and precedence they presumably would have acquired but for the fact of their capture, escape or evasion from the enemy.

(c) In the reassignment of subject personnel after completion of leave, effort will be made to accommodate the desires of subject personnel as to type of duty and station. The Bureau of Naval Personnel shall determine type of retraining, if any, which may be necessary, in order to fit those who have been retained in the service for further efficient performance. Consideration will also be given in all matters of assignment to the fact that subject personnel may be in need of special assignment.

8. Personnel in the process of discharge or release from service shall be afforded the usual discharge and readjustment facilities.

--BuPers. Randall Jacobs.

--BuMed. Ross T. McIntire.

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